IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1. (currently amended) A device, comprising:

an integrated circuit chip; and

enclosed channels to carry a liquid coolant that are proximate to a surface of the integrated circuit chip and that extend in parallel lines along ~~a~~ an entire length of the integrated circuit chip,

wherein a density of the channels changes abruptly at least ~~once~~ twice across the length of the integrated circuit chip ~~or across a width of the integrated circuit chip~~.

2. (original) The device of claim 1, wherein the channels are formed in the integrated circuit chip and substantially under the surface of the integrated circuit chip.

3. (original) The device of claim 1, further comprising:

a heat exchange layer over the integrated circuit chip,

wherein the channels are formed in the heat exchange layer.

4. (original) The device of claim 3, further comprising:

a cap on the heat exchange layer to at least partially define the channels.

5. (original) The device of claim 3, further comprising:

an interface layer between the integrated circuit chip and the heat exchange layer.

6. (original) The device of claim 1, wherein the channels include:

a first area having a first channel density, and

a second area adjacent to the first area and having a second channel density that is lower than the first channel density.

7. (original) The device of claim 6, wherein at least one of the first and second areas span a full width of the integrated circuit chip.

8. (original) The device of claim 6, wherein the channels further include:

a third area adjacent to the second area having a third channel density that is different than the second channel density.

9. (original) The device of claim 6, wherein the channels are longitudinally offset at least once within the first area.

10. (currently amended) A device, comprising:

a semiconductor base including an area of higher power density and an area of lower power density; ~~and~~

a heat exchange layer over the semiconductor base and including parallel enclosed channels formed therein suitable for carrying liquid coolant; and

an upper heat exchange layer over and in a parallel plane to the heat exchange layer and including parallel upper channels formed therein that are enclosed and suitable for carrying liquid coolant,

wherein a density of the parallel enclosed channels over the area of higher power density is higher than a density of the enclosed channels over the area of lower power density.

11. (original) The device of claim 10, further comprising:

a thermal interface layer between the semiconductor base and the heat exchange layer.

12. (original) The device of claim 10, further comprising:

a plate on the heat exchange layer to at least partially define the channels.

13. (original) The device of claim 10, wherein a ratio of the density of the channels over the area of higher power density to the density of the channels over the area of lower power density is greater than about 1.1.

14. (original) The device of claim 10, wherein the channels over the area of higher power density include at least two staggered segments.

15. (original) The device of claim 10, wherein the semiconductor base includes an area having an intermediate power density that is between the higher power density and the lower power density, and

wherein a density of the channels over the area having the intermediate power density is higher than the density of the channels over the area of lower power density and is lower than the density of the channels over the area of higher power density.

16. (canceled)

17. (currently amended) The device of claim ~~16~~ 10, wherein a density of the upper channels over the area of higher power density is higher than a density of the upper channels over the area of lower power density.

18. (currently amended) The device of claim ~~16~~ 10, wherein a direction of the channels in the heat exchange layer is substantially orthogonal to a direction of the upper channels in the upper heat exchange layer.

19. (currently amended) A device, comprising:

an integrated circuit chip including linear enclosed channels in a surface thereof; ~~and~~

a cap connected to the integrated circuit chip to define a top of the channels,

wherein an average width of the linear enclosed channels substantially changes at least once along a length of the channels; and

a heat exchange layer over and parallel to the cap and including linear upper channels formed therein that are enclosed and suitable for carrying liquid coolant,

wherein an average width of the linear upper channels substantially changes at least once along a length of the upper channels.

20. (original) The device of claim 19, wherein the channels include one area of higher average width and a different area of lower average width, and

wherein a ratio of the higher average width to the lower average width is less than about 8.

21. (original) The device of claim 19, wherein the channels include one area of higher average width and a different area of lower average width, and

wherein the channels within the area of lower average width include at least one discontinuity.

22. (original) The device of claim 19, wherein an average width of the channels substantially changes at least twice along a length of the channels.

23. (canceled)

24. (currently amended) The device of claim ~~23~~ 19, wherein a direction of the length of the channels in the integrated circuit chip is substantially orthogonal to a direction of the length of the upper channels in the heat exchange layer.

25-26. (canceled)

27. (currently amended) A method, comprising:

forming first parallel channels in a layer of a semiconductor device;

forming second parallel channels in the layer of a semiconductor device adjacent to one end of the first channels and in a same direction as the first parallel channels, the second parallel channels having a greater average width than the first parallel channels; and

capping the first and second parallel channels to form a channel structure suitable for carrying liquid coolant in a single direction through the semiconductor device.

28. (original) The method of claim 27, wherein the layer of the semiconductor device includes copper, aluminum, or silicon.

29-31. (canceled)